SAMPLING AND QUALITY ASSURANCE PLAN

BAYONNE BARREL AND DRUM SITE
NEWARK, ESSEX COUNTY, NEW JERSEY

VERIFICATION OF ERCS DIOXIN SAMPLING

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Bayp[redacted] Barrel & Drum

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1.0 BACKGROUND

The Bayonne Barrel and Drum Site (BB&D) is a former drum reconditioning facility occupying approximately 15 acres off of Raymond Boulevard in the Ironbound section of Newark, New Jersey (see Figure 1). The facility operated as an unlicensed Treatment, Storage, and Disposal facility (TSDF) from the early 1940s until the early 1980s when the company filed bankruptcy under Chapter 11. The site is bordered on the north and west by Routes 1 and 9, on the east by the New Jersey Turnpike and on the south by a movie theater.

Part of the drum reconditioning process by Bayonne Barrel & Drum included incineration of open-head drums, within site building #2. Incinerator ash, generated as a result of the unpermitted incinerator, was then staged in eight ash piles which encompass approximately 11,375 square feet in the southwest corner of the site. Incinerator ash on the floor and within six floor troughs of building #2 was removed and staged in three 30-cubic yard roll-offs.

As a result of the incineration process, the soil and ash on the site were contaminated with polychlorinated biphenyls (PCBs), polychlorinated dibenzo-p-dioxins (tetra- through octachlorinated homologues - PCDDs), and polychlorinated dibenzofurans (tetra- through octachlorinated homologues - PCDFs). The presence of such compounds are further substantiated by the existence of drums on site with generator hazardous waste labels. The labels have Resource Conservation and Recovery Act (RCRA) waste codes F001-F005 (spent halogenated solvents or non-halogenated solvents). These RCRA waste codes are potential PCDD and PCDF precursors.

2.0 PROJECT SCOPE & DATA OBJECTIVES

The EPA Removal Action Branch (RAB) has tasked the EPA Region II Technical Assistance Team (TAT) with the removal action second phase sampling and analysis at the Bayonne Barrel and Drum Site.

Based on historical information regarding operational procedures at the site and previous analysis conducted by the Emergency Response Cleanup Services (ERCS) contractor, the following four areas are of concern for the second phase of the removal action: eight ash piles at the southwest corner of the site; three 30-cubic yard roll-offs staged in front of building #2; soil in the former drum pile area; and courtyard soils between buildings #s 1, 2, 3, and 4 (see figure 1).

matrices - ash soil

The sampling objective for this phase of the project is to confirm the ERCS contractor's sampling results of ash piles #s 1, 2 and 3 and the courtyard area and to determine if the soils beneath the former drum pile area contain dioxin through PCB, PCDD, and PCDF analyses.

The data generated from this sampling and analyses project will be used for the disposal of the eight ash piles and the three roll-offs. In addition, the data will be used to determine if the soils in the rear of the site and in the courtyard area are contaminated with dioxin.

3.0 QUALITY ASSURANCE OBJECTIVES

As identified in Sections 1.0 and 2.0, the objective of the project/event applies to the following parameters:

Sample Parameter/Fraction	Analytical Method Reference	Holding Time	Volume
TCL PCB — high	SW-8080	7 days	1 X 8 oz.
PCDD/PCDF	SW-8280	30 days	2 X 8 oz.

8290? High Res

NOTE:
1. Sample matrix is soil/ash (low/med concentration)
2. Sample preparation method for TCL fraction is SW-3510/3540
3. Sample preservation is cool to 4C
4. Sample QA/QC objective is level 2
5. Limit of detection is analyte-specific
6. Holding time is determined from collection date to extraction

4.0 SAMPLING APPROACH & METHODOLOGIES

4.1 Sampling Design

The ERCS contractor's confirmation soil/ash samples will consist of one five-point composite sample collected from each of the two ash piles determined by ERCS to contain the highest levels of dioxin, one three-point composite sample from each of the three 30-cubic yard roll-offs staged in front of building #2, one two-point biased composite sample from the courtyard area and four soil samples from the rear drum pile area. All samples will be surficial, 0-6 inches in depth. The ash sample locations will correspond to prior ERCS contractor's sampling, with the soil samples located along a diagonal transect through the former drum pile area and the courtyard sample near the mouth of the incinerator. All samples will be excavated using

disposable plastic scoops. The samples will be homogenized in disposable aluminum baking pans. The representative sample collected from the resulting mixed volume will be analyzed for PCBs, PCDDs, and PCDFs.

Eleven soil/ash samples, including one field duplicate will be collected from the ash piles, roll-offs, and former drum pile area. One 8-oz. glass jar will be collected per sample for PCB, PCDD and PCDF analyses collectively. Triple volume will be collected at one location to include Matrix spike/matrix spike duplicate (MS/MSD) samples. In addition, one set of performance evaluation samples (PES) will be submitted for PCDD and PCDF analyses (See Section 6.2).

A summary of the samples to be taken is as follows:

Sample Type	Dioxin Analysis	PCB Analysis
Soil/Ash sample(s)	10	10
Field Duplicate(s)	1	1
Field Blank(s)	-	-
Rinsate Blank(s)	-	-
MS/MSD Sample(s)	1	1
PE Sample Set(s)	1	1
TOTAL:	13	13

4.2 Sampling Equipment

Sample containers will be specially cleaned laboratory glassware, as directed under OSWER Directive 9240.0-05: Specifications and Guidance for Obtaining Contaminant-Free Sample Containers (July 1989). The outside of the sample jars will be wiped clean using plain paper towels to prevent possible spread of contamination beyond the decontamination zone.

All ash and surface soil samples will be collected using disposable plastic scoops and aluminum baking pans. Decontamination procedures will therefore not be necessary.

4.3 Standard Operating Procedures

4.3.1 Sample Documentation

All sampling information will be completed legibly and in ink. Any mistakes that are made will be denoted by a single line to cross out the mistake and the initials of the transcriber.

4.3.1.1 FIELD LOG BOOK

The field log book details site activities and observations such that it can account for field procedures and pertinent information in the transcriber's absence. All entries will be dated and signed by the

transcriber and will be maintained by the sampling contractor. The following information will be recorded:

1. Site name and project number;
2. Name(s) of personnel on site;
3. Dates and times of all entries (military time);
4. Descriptions of all site activities, including site entry and exit times, noteworthy events and discussions, site observations;
5. Weather conditions;
6. Identification and description of samples and locations;
7. Subcontractor information and names of on site personnel;
8. Date and time of sample collections, along with chain of custody information;
9. Sample locations, sampling equipment and other equipment used to make field measurements;
10. Calibration data for equipment;
11. Calculations and results;
12. Record of photographs;
13. Site sketches.

4.3.1.2 SAMPLE LABELS

Each sample will be accurately and completely identified. All labels will be moisture-resistant and able to withstand field conditions. Sample containers will be labeled prior to sample collection. The information on each label will include, but is not limited to, the following, but is not limited to:

1) Date/time of collection;
2) Sample identity/location;
3) Analysis requested;
4) Sample type (composite);
5) Sample preservation (if required).

4.3.1.3 CHAIN OF CUSTODY RECORD

EPA chain of custody records will be completed and maintained throughout the entire site activities as per TAT Standard Operating Procedures (SOP) on sample handling, sample container contract specifications, and EPA Laboratory's SOP. The chain of custody form to be used lists the following information:

1) Sample number;
2) Number of sample containers;
3) Description of samples including specific location of sample collection;
4) Identity of person collecting the sample;
5) Date and time of sample collection;
6) Date and time of custody transfer to laboratory (if the sample was collected by a person other than laboratory personnel);
7) Identity of person accepting custody (if the sample was collected by a person other than the laboratory personnel);
8) Identity of laboratory performing the analysis.

4.3.1.4 CHAIN OF CUSTODY SEALS

Chain of Custody Seals demonstrate that a sample container has not been tampered with or opened.

The individual packaging the sample(s) must sign and date the seal, affixing it in such a manner that the container cannot be opened without breaking the seal. The name of this individual, along with a description of the sample packaging, must be noted in the Field Log Book.

4.3.2 SOIL SAMPLING SOP

Collection of surface soil samples will be accomplished with disposable plastic scoops. Prior to the collection of the sample, surface debris will be removed with a sterile sampling tool.

As with all samples (both surficial and at depth), the soil will be removed from the sample location and homogenized in an aluminum baking pan. A representative sample will be collected and transferred into an appropriately labelled sample container. (See Appendix A for further reference.)

4.3.3 Sample Handling and Shipment SOP

After a sample has been collected, the sample bottle will be capped and affixed with a custody seal. Each sample will be labelled with the appropriate information (including sample number, date and time of collection, analysis requested and preservative used). All of the samples will be packaged and shipped according to the proper DOT shipping regulations.

4.4 Schedule of Activities

Sample collection is scheduled for the Wednesday, August 23, 1995. Shipment of samples to the laboratory will occur on Thursday, August 24, 1995.

5.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

The EPA On-Scene Coordinator (OSC), Joe Cosentino, or his designated alternate will provide the Region II TAT direction concerning project sampling needs, objectives, and schedules.

The TAT Project Manager, Heidemarie Adenau, is the primary point of contact with the EPA OSC. The project manager is responsible for the development and completion of the Sampling QA/QC Plan, project team organization, and supervision of all project tasks, including reporting and deliverables.

The TAT Sample Management Officer/Site QC Coordinator, Jennifer Leahy is responsible for ensuring field adherence to the Sampling QA/QC Plan and recording any deviations from the plan.

The TAT Analytical Coordinator, Smita Sumbaly, is responsible for soliciting laboratories for analytical services and data validation.

6.0 QUALITY ASSURANCE AND QUALITY CONTROL REQUIREMENTS

The contracted laboratory must conduct its analyses with a quality assurance/quality control (QA/QC) Level 2 (QA-2). In order to ensure accurate data, the following measures are required:

1) Sample documentation;
2) Chain of custody;
3) Sample holding times;
4) Rinse & field blanks;
5) 10% Matrix Spike/Matrix Spike Duplicate;
6) Confirmation analysis;
7) Initial & continuing instrument calibration;
8) PES(s)
9) Detection limits;
10) Data summary.

PCDD/PCDF Analysis:

1) One matrix spike analysis will be performed on one sample in each set of 20 environmental samples collected.

2) One duplicated sample analysis will be performed for each set of 20 environmental samples collected.

3) Analysis of one set of PES(s) will be performed for each set of 20 environmental samples collected. PES(s) from the Superfund PES Repository will be ordered by the OSC from the 1995 Superfund Performance Evaluation Sample catalog and shipped directly to the laboratory with the appropriate blind inventory sample labels.

   a) One sample fortified with 2,3,7,8-TCDD isomers.
   b) One sample fortified with 2,3,7,8-substituted isomers.
   c) One blank soil, analyzed by EMSL-LV and determined to be free of dioxin or furan congeners.

4) The contracted laboratory will furnish the following deliverables as warranted:

   a) GC tuning and calibration standards;

   b) Copies of all spectral data obtained during performance of analysis. Copies should be signed by the analyst and checked by the laboratory manager;

   c) The detection limit will be determined and recorded, along with the data, where appropriate; detection limits must meet the specified limits provided in Appendix A.

   d) Data system printout (quantitation report or legible facsimile GC);

   e) Manual work sheets;

   f) Identification and explanation of any analytical modifications that differ from U.S. EPA protocol.

All analytical results are to be submitted by the laboratory to the Region II TAT Analytical Coordinator. A written report will be submitted within 28 calendar days of the date the laboratory received the samples for PCDD/PCDF analysis.

7.0 DELIVERABLES

A trip report will be prepared by the Project Manager highlighting the sampling activities and pertinent occurrences and delivered to the OSC within one week of the sampling event. Once the raw data has been received from the laboratory, an analytical package will be provided to the OSC.

8.0 DATA VALIDATION

All steps of data generation and handling will be evaluated by the OSC, the Project Manager, and the Quality Assurance Officer for compliance with EPA Region II SOP for validating hazardous waste site data.

9.0 SYSTEM AUDIT

The Quality Assurance/Quality Control (QA/QC) Officer or a designated representative will observe the sampling operations and review subsequent analytical data to assure that the QA/QC project plan has been followed.

10.0 CORRECTIVE ACTIONS

All provisions will be taken in the field and laboratory to ensure that any problems that may develop will be dealt with as quickly as possible to ensure the continuity of the sampling program. Any deviations from this sampling plan will be noted in the final report.

Which DV SOPs?

Suggest for:

8080A → SOP #23

8290? → SOP #19 or #24

APPENDIX A

1.0 SOIL SAMPLING: SOP #2012

1.1 SCOPE AND APPLICATION

The purpose of this Standard Operating Procedure (SOP) is to describe the procedures for collecting representative soil samples. Analysis of soil samples may determine whether concentrations of specific sod pollutants exceed established action levels, or if the concentrations of soil pollutants present a risk to public health, welfare, or the environment.

1.2 METHOD SUMMARY

Soil samples may be collected using a variety of methods and equipment. The methods and equipment used are dependent on the depth of the desired sample, the type of sample required (disturbed versus undisturbed), and the type of soil. Near-surface soils may be easily sampled using a spade, trowel, and scoop. Sampling at greater depths may be performed using a hand auger, a trier, a split-spoon, or, if required, a backhoe.

1.3 SAMPLE PRESERVATION, CONTAINERS, HANDLING, AND STORAGE

Chemical preservation of solids is not generally recommended. Refrigeration to 4°C, supplemented by a minimal holding time, is usually the best approach.

1.4 INTERFERENCES AND POTENTIAL PROBLEMS

There are two primary interferences or potential problems associated with soil sampling. These include cross-contamination of samples and improper sample collection. Cross-contamination problems can be eliminated or minimized through the use of dedicated sampling equipment. If this is not possible or practical, then decontamination of sampling equipment is necessary. Improper sample collection can involve using contaminated equipment, disturbance of the matrix resulting in compaction of the sample, or inadequate homogenization of the samples where required, resulting in variable, non-representative results.

1.5 EQUIPMENT/APPARATUS

- sampling plan
- maps/plot plan
- safety equipment, as specified in the health and safety plan
- compass
- tape measure
- survey stakes or flags
- camera and film
- stainless steel, plastic, or other appropriate homogenization bucket or bowl
- 1-quart mason jars w/Teflon liners
- Ziploc plastic bags
- logbook

1.5 EQUIPMENT/APPARATUS (cont.)

- labels
- chain of custody forms and seals
- field data sheets
- cooler(s)
- ice
- decontamination supplies/equipment
- canvas or plastic sheet
- spade or shovel
- spatula
- scoop
- plastic or stainless steel spoons
- trowel
- continuous flight (screw) auger
- bucket auger
- post hole auger
- extension rods
- T-handle
- sampling trier
- thin-wall tube sampler
- Vehimeyer soil sampler outfit
  - tubes
  - points
  - drive head
  - drop hammer
  - puller jack and grip
- backhoe

1.6 REAGENTS

Reagents are not used for the preservation of soil samples. Decontamination solutions are specified in ERT SOP #2006, Sampling Equipment Decontamination.

1.7 PROCEDURES

1.7.1 Preparation

1. Determine the extent of the sampling effort, the sampling methods to be employed, and which equipment and supplies are required.

2. Obtain necessary sampling and monitoring equipment.

3. Decontaminate or preclean equipment, and ensure that it is in working order.

4. Prepare schedules, and coordinate with staff, client, and regulatory agencies, if appropriate.

5. Perform a general site survey prior to site entry in accordance with the site-specific health and safety plan.

6. Use stakes, buoys, or flagging to identify and mark all sampling locations. Consider specific site factors, including extent and nature of contaminant, when selecting sample location. If required, the proposed locations may be adjusted based on site access, property boundaries, and surface obstructions. All staked locations will be utility-cleared by the property owner prior to soil sampling.

1.7.2 Sample Collection

Surface Soil Samples

Collect samples from near-surface soil with tools such as spades, shovels, and scoops. Surface material can be removed to the required depth with this equipment, then a stainless steel or plastic scoop can be used to collect the sample.

This method can be used in most soil types but is limited to sampling near surface areas. Accurate, representative samples can be collected with this procedure depending on the care and precision demonstrated by the sampling team member. The use of a flat, pointed mason trowel to cut a block of the desired soil can be helpful when undisturbed profiles are required. A stainless steel scoop, lab spoon, or plastic spoon will suffice in most other applications. Avoid the use of devices plated with chrome or other materials. Plating is particularly common with garden implements such as potting trowels.

Follow these procedures to collect surface soil samples.

1. Carefully remove the top layer of soil or debris to the desired sample depth with a precleaned spade.

2. Using a pre-cleaned, stainless steel scoop, plastic spoon, or trowel, remove and discard a thin layer of soil from the area which came in contact with the spade.

3. If volatile organic analysis is to be performed, transfer a portion of the sample directly into an appropriate, labeled sample container(s) with a stainless steel lab spoon, plastic lab spoon, or equivalent and secure the cap(s) tightly. Place the remainder of the sample into a stainless steel, plastic, or other appropriate homogenization container, and mix thoroughly to obtain a homogenous sample representative of the entire sampling interval. Then, either place the sample into an appropriate, labeled container(s) and secure the cap(s) tightly; or, if composite samples are to be collected, place a sample from another sampling

interval into the homogenization container and mix thoroughly. When compositing is complete, place the sample into appropriate, labeled container(s) and secure the cap(s) tightly.

1.8 CALCULATIONS

This section is not applicable to this SOP.

1.9 QUALITY ASSURANCE/ QUALITY CONTROL

There are no specific quality assurance activities which apply to the implementation of these procedures. However, the following QA procedures apply:

- All data must be documented on field data sheets or within site logbooks.
- All instrumentation must be operated in accordance with operating instructions as supplied by the manufacturer, unless otherwise specified in the work plan. Equipment checkout and calibration activities must occur prior to sampling/operation, and they must be documented.

1.10 DATA VALIDATION

This section is not applicable to this SOP.

1.11 HEALTH AND SAFETY

When working with potentially hazardous materials, follow U.S. EPA, OSHA, and specific health and safety procedures.